Υπουργείο Οικονομίας, Ανταγωνιστικότητας και Ναυτιλίας

"Προστασία και Ανόρθωση Υδατικών και Δασικών Πόρων Νομού Ροδόπης"

Δράση 1

Ε1.1 Σχεδιασμός διαδικτυακών Συστημάτων Γεωγραφικών Πληροφοριών (ΣΓΠ) για τη Διεύθυνση Υδάτων και για τη Διεύθυνση Δασών

ΠΑ1.1 Προδιαγραφές ανάπτυξης Διαδικτυακού ΣΓΠ για τη Διεύθυνση Υδάτων

PA1.1 Specifications for the development of a web GIS for the Water Directorate

Αποστολάκης Αντώνης

Θεσσαλονίκη, 2011

Η παρούσα μελέτη εκπονήθηκε από το Ελληνικό Κέντρο Βιοτόπων-Υγροτόπων (ΕΚΒΥ) στο πλαίσιο της Δράσης 1 του έργου «Προστασία και Ανόρθωση Υδατικών και Δασικών Πόρων Νομού Ροδόπης», που υλοποιείται από την Περιφέρεια Ανατολικής Μακεδονίας και Θράκης, με τη συνεργασία του Περιφερειακού Ταμείου Ανάπτυξης Ανατολικής Μακεδονίας και Θράκης, του Φορέα Διαχείρισης Δέλτα Νέστου – Βιστωνίδας - Ισμαρίδας και του Ελληνικού Κέντρου Βιοτόπων-Υγροτόπων (ΕΚΒΥ). Το έργο χρηματοδοτείται σε ποσοστό 50% από το Χρηματοδοτικό Μέσο Χωρών του Ενιαίου Οικονομικού Χώρου 2004 - 2009 και σε ποσοστό 50% από το Πρόγραμμα Δημοσίων Επενδύσεων (ΠΔΕ) (εθνικούς πόρους).

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Υπουργείο Οικονομίας, Ανταγωνιστικότητας και Ναυτιλίας

ΠΑ1.1 Προδιαγραφές ανάπτυξης Διαδικτυακού ΣΓΠ για τη Διεύθυνση Υδάτων

ΤΙΤΛΟΣ / TITLE	**ΠΑ1.1 Προδιαγραφές ανάπτυξης Διαδικτυακού ΣΓΠ για τη Διεύθυνση Υδάτων /** PA1.1 Specifications for the development of a web GIS for the Water Directorate
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ΠΕΡΙΕΧΟΜΕΝΑ

1. ΕΙΣΑΓΩΓΗ

Το παρόν κείμενο αποτελεί τον σχεδιασμό ενός Διαδικτυακού Συστήματος Γεωγραφικών Πληροφοριών (ΣΓΠ) για την οργάνωση των γεωχωρικών και περιγραφικών δεδομένων που παράγει, συντηρεί και διαχειρίζεται η Διεύθυνση Υδάτων της Περιφέρειας Ανατολικής Μακεδονίας - Θράκης (Π.Α.Μ.Θ.), και που σχετίζονται με τη διαχείριση των υδατικών πόρων του νομού.

Υλοποιείται στο πλαίσιο της Δράσης 1 του έργου "Προστασία και Ανόρθωση Υδατικών και Δασικών Πόρων Νομού Ροδόπης", το οποίο εκτελείται με χρηματοδότηση από τον Ευρωπαϊκό Οικονομικό Χώρο (ΕΕΑ Grants) και την Ελληνική Κυβέρνηση, με Φορέα Υλοποίησης την Αποκεντρωμένη Διοίκηση Μακεδονίας - Θράκης (πρώην Περιφέρεια Ανατολικής Μακεδονίας - Θράκης[1]) και εταίρους το Περιφερειακό Ταμείο Ανάπτυξης (ΠΤΑ) Ανατολικής Μακεδονίας και Θράκης, το Ελληνικό Κέντρο Βιοτόπων-Υγροτόπων (ΕΚΒΥ) και τον Φορέα Διαχείρισης Δέλτα Νέστου - Βιστωνίδας - Ισμαρίδας.

Η οργάνωση των υδατικών δεδομένων και η διάχυσή τους μέσω του Διαδικτυακού Συστήματος Γεωγραφικών Πληροφοριών (ΣΓΠ) αποσκοπεί στην βέλτιστη πρόσβαση στα δεδομένων αυτών από ευρύ αριθμό χρηστών και στην ακριβή πληροφόρηση των φορέων που σχετίζονται με τη διαχείριση και την προστασία των δασών και των υδατικών πόρων.

Αναλύονται κυρίως οι προδιαγραφές του μοντέλου δεδομένων κατα την οδηγία INSPIRE της ΕΕ για τα επιφανειακά ύδατα, οι προδιαγραφές των μεταδεδομένων τους, οι δικτυακές υπηρεσίες απεικόνισης των γεωχωρικών δεδομένων και δημοσίευσής τους σε κεντρικό εξυπηρετητή γεωγραφικών δεδομένων της Περιφέρειας, καθώς και οι τεχνικές προδιαγραφές τους συστήματος, αναφορικά με το λογισμικό, υλισμικό, τη συνδεσιμότητα με το εσωτερικό δίκτυο και το διαδίκτυο, κ.ά.

2. ΠΡΟΔΙΑΓΡΑΦΕΣ ΑΝΑΠΤΥΞΗΣ ΔΙΑΔΙΚΤΥΑΚΟΥ ΣΓΠ ΔΙΕΥΘΥΝΣΗΣ ΥΔΑΤΩΝ

2.1 Προδιαγραφές μοντέλου δεδομένων υδατικών πόρων

Τα υδρογραφικά δεδομένα που διαθέτει η Δ. Υδάτων και που υπόκεινται στο παράρτημα 1 της οδηγίας Inspire είναι:

- Επιφανειακά ύδατα

[1] Ενώ αρχικά φορέας υλοποίησης ήταν η Περιφέρεια Ανατολικής Μακεδονίας - Θράκης (Π.Α.Μ.Θ.), μετά τη διοικητική μεταρρύθμιση του Καλλικράτη που συνέπεσε χρονικά με την υλοποίηση του έργου, φορέας υλοποίησης είναι η Αποκεντρωμένη Διοίκηση Μακεδονίας - Θράκης στην οποία ανήκει πλέον η Π.Α.Μ.Θ.

- Ποτάμια και χείμαροι
- Πηγάδια
- Λεκάνες απορροής

Με βάση τις προδιαγραφές του έργου τα δεδομένα αυτά θα πρέπει να συμμορφωθούν με βάση τα πρότυπα της παραπάνω οδηγίας.

Λόγω της δομής των δεδομένων που περιγράφονται στην οδηγία καθώς και των μεταξύ τους σχέσεων η υλοποίηση της μετατροπής πρέπει να γίνει σε μια μορφή δεδομένων που να υποστηρίζει όλες τις απαιτήσεις που προκύπτουν απο την εφαρμογή της οδηγίας.
Για τους παραπάνω λόγους, συνίσταται η χρήση γεωβάσης όπως αυτή υποστηρίζεται απο το λογισμικό ArcGIS και η οποία είναι σε θέση να υποστηρίξει τις αντίστοιχες ανάγκες.

Παρακάτω δίνονται αναλυτικά οι προδιαγραφές των τεσσάρων υδρογραφικών δεδομένων που θα πρέπει να μετατραπούν προσαρμοσμένες στις δομές που υποστηρίζουν οι γεωβάσεις του λογισμικού ARCGis (feature classes, tables, object classes κ.α.) σε πλήρη εναρμόνιση με τις προδιαγραφές της οδηγίας INSPIRE καθώς και με τις αντίστοιχες περιγραφές.

2.1.1 Λεκάνες Απορροής

Feature Class 'hypBasinS'

Index

General description

This class contains instances of the INSPIRE feature type 'hy-p:DrainageBasin'. It is used to represent instances with a polygon geometry.

INSPIRE feature type 'hy-p:DrainageBasin' has subtypes and the following table lists all concrete INSPIRE types that are represented in this Feature Class, if the feature is with a polygon geometry.

Table: Feature types stored in Feature Class 'hypBasinS'

Feature type	Source application schema	Subtype code	Documentation
hy-p:DrainageBasin	Hydro - Physical Waters	140	Area having a common outlet for its surface runoff. SOURCE [UNESCO/WMO International Glossary of Hydrology]. NOTE 1 Regarding the different classifications of drainage basins, no distinction is made between drainage basins / sub-basins since this will vary with application. It is possible to build

			basins from other basins. NOTE 2 The outlet of a drainage basin may be a canal or a lake. NOTE 3 Synonyms for drainage basin include: catchment; catchment area; drainage area; river basin; watershed.
hy-p:RiverBasin	Hydro - Physical Waters	141	The area of land from which all surface run-off flows through a sequence of streams, rivers and, possibly, lakes into the sea at a single river mouth, estuary or delta. SOURCE [2000/60/EC Art. 2(13)].

Fields

Field	Property name	In feature types	Type	Documentation
area_	area	hy-p:DrainageBasin hy-p:RiverBasin	Double	Size of the drainage basin area. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:area'.
area_uom	-	hy-p:DrainageBasin hy-p:RiverBasin	String(255)	This field contains the unit of measure associated with the value in field area. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:area/@uom'.
area_void	-	hy-p:DrainageBasin hy-p:RiverBasin	SmallInteger	This field indicates whether the property in field area is NIL. If the field area_void is NULL, then the property is not NIL and the value in field area applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:area/@xsi:nil'.
basinOrder_order	order	hy-p:DrainageBasin hy-p:RiverBasin	String(255)	Number (or code) expressing the degree of branching or dividing in a stream or drainage basin system. SOURCE [Based on UNESCO/WMO International Glossary of Hydrology]. In the GML encoding, this

				field is represented by the following Xpath expression: 'hy-p:basinOrder/hy-p:HydroOrderCode/hy-p:order'.
basinOrder_orderScheme	orderScheme	hy-p:DrainageBasin hy-p:RiverBasin	String(255)	A description of the concept for ordering. EXAMPLE Strahler, Horton, Pfaffstetter etc. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:basinOrder/hy-p:HydroOrderCode/hy-p:orderScheme'.
basinOrder_scope	scope	hy-p:DrainageBasin hy-p:RiverBasin	String(255)	An indicator of the scope or origin for an order code (including whether it is national, supranational or European). NOTE In the case of a national hydrographic identifier it may start with a two-letter country code as per ISO 3166-1-Alpha-2. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:basinOrder/hy-p:HydroOrderCode/hy-p:scope'.
beginLifespanVersion	beginLifespanVersion	hy-p:DrainageBasin hy-p:RiverBasin	Date	Date and time at which this version of the spatial object was inserted or changed in the spatial data set. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:beginLifespanVersion'.
beginLifespanVersion_void	-	hy-p:DrainageBasin hy-p:RiverBasin	SmallInteger	This field indicates whether the property in field beginLifespanVersion is NIL. If the field beginLifespanVersion_void is NULL, then the property is not NIL and the value in field beginLifespanVersion applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:beginLifespanVersion/@xsi:nil'.
contains_void	-	hy-	SmallInteger	This field indicates whether

		p:DrainageBasin hy-p:RiverBasin		the associated property hy-p:containsBasin, see the corresponding relationship table(s) between hypBasinS and the tables containing instances of type hy-p:DrainageBasin, is NIL. If the field contains_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:containsBasin/@xsi:nil'.
endLifespanVersion	endLifespanVersion	hy-p:DrainageBasin hy-p:RiverBasin	Date	Date and time at which this version of the spatial object was superseded or retired in the spatial data set. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:endLifespanVersion'.
endLifespanVersion_void	-	hy-p:DrainageBasin hy-p:RiverBasin	SmallInteger	This field indicates whether the property in field endLifespanVersion is NIL. If the field endLifespanVersion_void is NULL, then the property is not NIL and the value in field endLifespanVersion applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:endLifespanVersion/@xsi:nil'.
hyId_void	-	hy-p:DrainageBasin hy-p:RiverBasin	SmallInteger	This field indicates whether the associated property hy:hydroId (entries in table hypBasinS_hyId) is NIL. If the field hyId_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is

				NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/@xsi:nil'.
id_localId	localId	hy-p:DrainageBasin hy-p:RiverBasin	String(255)	A local identifier, assigned by the data provider. The local identifier is unique within the namespace, that is no other spatial object carries the same unique identifier. NOTE It is the responsibility of the data provider to guarantee uniqueness of the local identifier within the namespace. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:localId'.
id_namespace	namespace	hy-p:DrainageBasin hy-p:RiverBasin	String(255)	Namespace uniquely identifying the data source of the spatial object. NOTE The namespace value will be owned by the data provider of the spatial object and will be registered in the INSPIRE External Object Identifier Namespaces Register. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:namespace'.
id_versionId	versionId	hy-p:DrainageBasin hy-p:RiverBasin	String(255)	The identifier of the particular version of the spatial object, with a maximum length of 25 characters. If the specification of a spatial object type with an external object identifier includes life-cycle information, the version identifier is used to distinguish between the different versions of a spatial object. Within the set of all versions of a spatial object, the version identifier is unique. NOTE The maximum length has been selected to allow for time stamps based on ISO 8601, for example, "2007-02-12T12:12:12+05:30" as the version identifier.

				NOTE 2 The property is void, if the spatial data set does not distinguish between different versions of the spatial object. It is missing, if the spatial object type does not support any life-cycle information. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:versionId'.
id_versionId_void	-	hy-p:DrainageBasin hy-p:RiverBasin	SmallInteger	This field indicates whether the property in field id_versionId is NIL. If the field id_versionId_void is NULL, then the property is not NIL and the value in field id_versionId applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:versionId/@xsi:nil'.
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the object/feature. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetworkElementL/netNetworkElementS, the IFCID value must be unique across these tables. In the GML encoding, this field is represented by the following Xpath expression: '@gml:id'.
name_void	-	hy-p:DrainageBasin hy-p:RiverBasin	SmallInteger	This field indicates whether the associated property hy:geographicalName (entries in table hypBasinS_name) is NIL. If the field name_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with

				a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:geographicalName/@xsi:nil'.
origin	origin	hy-p:DrainageBasin hy-p:RiverBasin	String(255)	Origin of the drainage basin. EXAMPLE Natural, man-made, etc. NOTE A polder is a drainage basin of man-made origin. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:origin'. Valid values: manMade — An indication that a spatial object is mar SOURCE [DFDD]. natural — An indication that a spatial object is natu
origin_void	-	hy-p:DrainageBasin hy-p:RiverBasin	SmallInteger	This field indicates whether the property in field origin is NIL. If the field origin_void is NULL, then the property is not NIL and the value in field origin applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:origin/@xsi:nil'.
outlet_void	-	hy-p:DrainageBasin hy-p:RiverBasin	SmallInteger	This field indicates whether the associated property hy-p:outlet, see the corresponding relationship table(s) between hypBasinS and the tables containing instances of type hy-p:SurfaceWater, is NIL. If the field outlet_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of

				'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:outlet/@xsi:nil'.
SHAPE	geometry	hy-p:DrainageBasin hy-p:RiverBasin	Geometry	The geometry of the drainage basin, as a surface. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:geometry'.

Dependent Object Class 'hypBasinS_name'

General description

This Object Class contains values for the property hy:HydroObject/hy:geographicalName.

Fields

Field	Property name	In feature types	Type	Documentation
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the data type. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetwork ElementL/netNetworkElementS, the IFCID value must be unique across these tables.
name	geographicalName	hy-p:DrainageBasin hy-p:RiverBasin	String(255)	A geographical name that is used to identify a hydrographic object in the real world. It provides a 'key' for implicitly associating different representations of the object. EXAMPLE A standing water in a mapping view may share the same geographical name as a WFD lake in a reporting view, implying they are both representations of the same real world object. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:geographicalName'.
RID	(IFC only)	(all)	Integer	Reference to IFCID field in parent 'hypDrainageBasinS'.

Dependent Object Class 'hypBasinS_hyId'

General description

This Object Class contains values for the property hy:HydroObject/hy:hydroId.

Fields

Field	Property name	In feature types	Type	Documentation
classificationScheme	classificationScheme	hy-p:DrainageBasin hy-p:RiverBasin	String(255)	A description of the identification scheme (National, European, etc.) being used.

				In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/hy:HydroIdentifier/hy:classificationScheme'.
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the data type. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetworkElementL/netNetworkElementS, the IFCID value must be unique across these tables.
localId	localId	hy-p:DrainageBasin hy-p:RiverBasin	String(255)	A local identifier, assigned by some authority. NOTE It will often be a national hydrographic identifier. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/hy:HydroIdentifier/hy:localId'.
namespace	namespace	hy-p:DrainageBasin hy-p:RiverBasin	String(255)	An indicator of the scope for the local identifier. NOTE In the case of a national hydrographic identifier it should be a two-letter country code as per ISO 3166-1-Alpha-2. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/hy:HydroIdentifier/hy:namespace'.
RID	(IFC only)	(all)	Integer	Reference to IFCID field in parent 'hypDrainageBasinS'.

Dependent Object Class 'hypBasinS_relHyObj'

General description

This Object Class contains values for the property hy:HydroObject/hy:relatedHydroObject.

Fields

Field	Property name	In feature types	Type	Documentation
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the data type. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetworkElementL/netNetworkElementS, the IFCID value must be unique across these tables.
relHyObj	relatedHydroObject	hy-	String(255)	A related hydrographic object representing the

		p:DrainageBasin hy-p:RiverBasin		same real-world entity. The value of this field must be a URN or an absolute URL referencing the related HydroObject. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:relatedHydroObject'.
RID	(IFC only)	(all)	Integer	Reference to IFCID field in parent 'hypDrainageBasinS'.

Relationship table 'hypBasin_containsSS'

General description

In forward direction, this relationship contains the property hy-p:DrainageBasin/hy-p:containsBasin. The property is defined as:

A smaller sub-basin contained within a larger basin.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypDrainageBasinS'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:containsBasin'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypDrainageBasinS'.

2.1.2 Ποτάμια

Feature Class 'hypSurfaceWaterL'

Index

General description

This class contains instances of the INSPIRE feature type 'hy-p:SurfaceWater'. It is used to represent instances with a polyline geometry.

INSPIRE feature type 'hy-p:SurfaceWater' has subtypes and the following table lists all concrete INSPIRE types that are represented in this Feature Class, if the feature is with a polyline geometry.

Table: Feature types stored in Feature Class 'hypSurfaceWaterL'

Feature type	Source application schema	Subtype code	Documentation
hy-p:StandingWater	Hydro - Physical Waters	158	A body of water that is entirely surrounded by land. SOURCE [DFDD]. NOTE It may occur in a natural terrain depression in which water collects, or may be impounded by a dam, or formed by its bed being hollowed out of the soil, or formed by embanking and/or damming up a natural hollow (for example: by a beaver dam). It may be connected to inflowing / outflowing watercourses or other standing waters.
hy-p:Watercourse	Hydro - Physical Waters	157	A natural or man-made flowing watercourse or stream. SOURCE [EuroRegionalMap].

Fields

Field	Property name	In feature types	Type	Documentation
bank_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy-p:bank, see the corresponding relationship table(s) between hypSurfaceWaterL and the tables containing instances of type lc:Shore, is NIL. If the field bank_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:bank/@xsi:nil'.
beginLifespanVersion	beginLifespanVersion	hy-p:StandingWater hy-p:Watercourse	Date	Date and time at which this version of the spatial object was inserted or changed in the spatial data set. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:beginLifespanVersion'.

beginLifespanVersion_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field beginLifespanVersion is NIL. If the field beginLifespanVersion_void is NULL, then the property is not NIL and the value in field beginLifespanVersion applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:beginLifespanVersion/@xsi:nil'.
condition	condition	hy-p:Watercourse	String(255)	The state of planning, construction, repair, and/or maintenance of a watercourse. SOURCE [Based on DFDD]. NOTE Only relevant for a man-made watercourse. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:condition'. Valid values: disused – The facility is not used. functional – The facility is functional. projected – The facility is being designed. Construction has not yet started. underConstruction – The facility is under construction and not yet functional. This applies only to the initial construction of the facility and not to maintenance work.
condition_cl	-	hy-p:Watercourse	String(255)	This field contains the absolute URI of the code list dictionary that describes that values allowed values in field condition and their description. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:condition/@codeSpace'.
condition_void	-	hy-p:Watercourse	SmallInteger	This field indicates whether the property in field condition is NIL. If the field condition_void is NULL, then the property is not NIL and the value in field condition applies. If the value is '0', the property is

				NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:condition/@xsi:nil'.
delineationKnown	delineationKnown	hy-p:Watercourse	SmallInteger	An indication that the delineation (for example: limits and information) of a spatial object is known. SOURCE [DFDD]. EXAMPLE The delineation may not be known in the following situations: - an underground watercourse - real underground network segment (pipeline or natural network section) - transition area between a broad river and a smaller tributary. The value of this field is a boolean and must be 1 for TRUE and 0 for FALSE. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:delineationKnown'.
delineationKnown_void	-	hy-p:Watercourse	SmallInteger	This field indicates whether the property in field delineationKnown is NIL. If the field delineationKnown_void is NULL, then the property is not NIL and the value in field delineationKnown applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:delineationKnown/@xsi:nil'.
drainsBasin_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy-p:drainsBasin, see the corresponding relationship table(s) between hypSurfaceWaterL and the tables containing instances

				of type hy-p:DrainageBasin, is NIL. If the field drainsBasin_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:drainsBasin/@xsi:nil'.
elevation	elevation	hy-p:StandingWater	Double	Elevation above mean sea level. SOURCE [Based on EuroRegionalMap]. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:elevation'.
elevation_uom	-	hy-p:StandingWater	String(255)	This field contains the unit of measure associated with the value in field elevation. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:elevation/@uom'.
elevation_void	-	hy-p:StandingWater	SmallInteger	This field indicates whether the property in field elevation is NIL. If the field elevation_void is NULL, then the property is not NIL and the value in field elevation applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:elevation/@xsi:nil'.
endLifespanVersion	endLifespanVersion	hy-p:StandingWater hy-p:Watercourse	Date	Date and time at which this version of the spatial object was superseded or retired in the spatial data set. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:endLifespanVersion'.

endLifespanVersion_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field endLifespanVersion is NIL. If the field endLifespanVersion_void is NULL, then the property is not NIL and the value in field endLifespanVersion applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:endLifespanVersion/@xsi:nil'.
hyId_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy:hydroId (entries in table hypSurfaceWaterL_hyId) is NIL. If the field hyId_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/@xsi:nil'.
id_localId	localId	hy-p:StandingWater hy-p:Watercourse	String(255)	A local identifier, assigned by the data provider. The local identifier is unique within the namespace, that is no other spatial object carries the same unique identifier. NOTE It is the responsibility of the data provider to guarantee uniqueness of the local identifier within the namespace. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:localId'.
id_namespace	namespace	hy-p:StandingWater	String(255)	Namespace uniquely identifying the data source of the spatial object.

		hy-p:Watercourse		NOTE The namespace value will be owned by the data provider of the spatial object and will be registered in the INSPIRE External Object Identifier Namespaces Register. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:namespace'.
id_versionId	versionId	hy-p:StandingWater hy-p:Watercourse	String(255)	The identifier of the particular version of the spatial object, with a maximum length of 25 characters. If the specification of a spatial object type with an external object identifier includes life-cycle information, the version identifier is used to distinguish between the different versions of a spatial object. Within the set of all versions of a spatial object, the version identifier is unique. NOTE The maximum length has been selected to allow for time stamps based on ISO 8601, for example, "2007-02-12T12:12:12+05:30" as the version identifier. NOTE 2 The property is void, if the spatial data set does not distinguish between different versions of the spatial object. It is missing, if the spatial object type does not support any life-cycle information. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:versionId'.
id_versionId_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field id_versionId is NIL. If the field id_versionId_void is NULL, then the property is not NIL and the value in field id_versionId applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'.

				In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:versionId/@xsi:nil'.
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the object/feature. In the GML encoding, this field is represented by the following Xpath expression: '@gml:id'.
length_	length	hy-p:Watercourse	Double	Length of the watercourse. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:length'.
length_uom	-	hy-p:Watercourse	String(255)	This field contains the unit of measure associated with the value in field length. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:length/@uom'.
length_void	-	hy-p:Watercourse	SmallInteger	This field indicates whether the property in field length is NIL. If the field length_void is NULL, then the property is not NIL and the value in field length applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:length/@xsi:nil'.
level_	level	hy-p:Watercourse	String(255)	Vertical location of watercourse relative to ground. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:level'. Valid values: onGroundSurface — The spatial object is on ground level. suspendedOrElevated — The spatial object is suspended or elevated.

				undergro und: The spatial object is underground.
level_void	-	hy-p:Watercourse	SmallIntege r	This field indicates whether the property in field level_ is NIL. If the field level_void is NULL, then the property is not NIL and the value in field level_ applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:level/@xsi:nil'.
localType	localType	hy-p:StandingWate r hy-p:Watercourse	String(255)	Provides 'local' name for the type of surface water. EXAMPLE Canal, channel, ditch, etc. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:localType'.
localType_loc	-	hy-p:StandingWate r hy-p:Watercourse	String(255)	This field contains the locale associated with the value in field localType. For example, if the localised text is in the locale English/UTF-8, then this field is a URL pointing to a publically available <PT_Locale> resource that might have the following content:. <PT_Locale id='locale-en'> <languageCode> <LanguageCode codeList='http://services.inte ractive-instruments.de/download/cl/ LanguageCode.xml' codeListValue='eng'>Englis h</LanguageCode> </languageCode> <characterEncoding> <MD_CharacterSetCode codeList='http://services.inte ractive-instruments.de/download/cl/ MD_CharacterSetCode.xml' codeListValue='utf8'>UTF-8</MD_CharacterSetCode> </characterEncoding> </PT_Locale>. PT_Locale is specified in ISO/TS 19139. In INSPIRE, UTF-8 should be used for the character encoding.

				In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:localType/@locale'.
localType_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field localType is NIL. If the field localType_void is NULL, then the property is not NIL and the value in field localType applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:localType/@xsi:nil'.
lod	levelOfDetail	hy-p:StandingWater hy-p:Watercourse	Integer	Resolution, expressed as the inverse of an indicative scale or a ground distance. NOTE The object is captured at a scale of this level of detail; rules apply for portrayal and visualisation. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:levelOfDetail'.
meanDepth	meanDepth	hy-p:StandingWater	Double	Average depth of the body of water. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:meanDepth'.
meanDepth_uom	-	hy-p:StandingWater	String(255)	This field contains the unit of measure associated with the value in field meanDepth. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:meanDepth/@uom'.
meanDepth_void	-	hy-p:StandingWater	SmallInteger	This field indicates whether the property in field meanDepth is NIL. If the field meanDepth_void is NULL, then the property is not NIL and the value in field meanDepth applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of

				'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:meanDepth/@xsi:nil'.
name_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy:geographicalName (entries in table hypSurfaceWaterL_name) is NIL. If the field name_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:geographicalName/@xsi:nil'.
neighbour_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy-p:neighbour, see the corresponding relationship table(s) between hypSurfaceWaterL and the tables containing instances of type hy-p:SurfaceWater, is NIL. If the field neighbour_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:neighbour/@xsi:nil'.
origin	origin	hy-p:StandingWater hy-p:Watercourse	String(255)	Origin of the surface water. SOURCE [Based on EuroRegionalMap]. EXAMPLE Natural, man-made, etc. NOTE 1 Natural surface waters are natural watercourses (e.g. rivers,

				streams) and standing waters (e.g. pools, lakes) naturally preserved and that have been canalised and / or dammed either for navigation or for preventing flood disaster. NOTE 2 A man-made surface water is a surface water entirely created by man for drainage, storage or transportation purpose, this includes canals, ditches and reservoirs. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:origin'. Valid values: manMade: An indication that a spatial object is man-made. SOURCE [DFDD]. natural: An indication that a spatial object is natural.
origin_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field origin is NIL. If the field origin_void is NULL, then the property is not NIL and the value in field origin applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:origin/@xsi:nil'.
persistence	persistence	hy-p:StandingWater hy-p:Watercourse	String(255)	The degree of persistence of water. SOURCE [Based on DFDD]. In the GML encoding, this field is represented by the following Xpath expression:

				'hy-p:persistence'. Valid values: dry: Filled and/or flowing infrequently, generally only during and/or immediately after heavy precipitation. SOURCE [DFDD]. NOTE The waterbody is often vegetated (for example: with shrubs); such a streambed in the Southwestern United States is termed a 'derramadero'. ephemeral: Filled and/or flowing during and immediately after precipitation. SOURCE [DFDD]. intermittent: Filled and/or flowing for part of the year. SOURCE [DFDD]. perennial: Filled and/or flowing continuously throughout the year as its bed lies below the water table. SOURCE [DFDD].
persistence_cl	-	hy-p:StandingWater hy-p:Watercourse	String(255)	This field contains the absolute URI of the code list dictionary that describes that values allowed values in field persistence and their description. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:persistence/@codeSpace'.
persistence_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field persistence is NIL. If the field persistence_void is NULL, then the property is not NIL and the value in field persistence applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:persistence/@xsi:nil'.
SHAPE	geometry	hy-p:StandingWater hy-p:Watercourse	Geometry	The geometry of the surface water: - either a curve or surface for a watercourse; - either a point or surface for a standing water. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:geometry'.
streamOrder_order	order	hy-p:Watercourse	String(255)	Number (or code) expressing the degree of branching or dividing in a

				stream or drainage basin system. SOURCE [Based on UNESCO/WMO International Glossary of Hydrology]. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:streamOrder/hy-p:HydroOrderCode/hy-p:order'.
streamOrder_orderScheme	orderScheme	hy-p:Watercourse	String(255)	A description of the concept for ordering. EXAMPLE Strahler, Horton, Pfaffstetter etc. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:streamOrder/hy-p:HydroOrderCode/hy-p:orderScheme'.
streamOrder_scope	scope	hy-p:Watercourse	String(255)	An indicator of the scope or origin for an order code (including whether it is national, supranational or European). NOTE In the case of a national hydrographic identifier it may start with a two-letter country code as per ISO 3166-1-Alpha-2. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:streamOrder/hy-p:HydroOrderCode/hy-p:scope'.
surfaceArea	surfaceArea	hy-p:StandingWater	Double	Surface area of the body of water. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:surfaceArea'.
surfaceArea_uom	-	hy-p:StandingWater	String(255)	This field contains the unit of measure associated with the value in field surfaceArea. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:surfaceArea/@uom'.
surfaceArea_void	-	hy-p:StandingWater	SmallInteger	This field indicates whether the property in field surfaceArea is NIL. If the field surfaceArea_void is NULL, then the property is not NIL and the value in

				field surfaceArea applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:surfaceArea/@xsi:nil'.
tidal	tidal	hy-p:StandingWater hy-p:Watercourse	SmallInteger	Identifies whether the surface water is affected by tidal water. The value of this field is a boolean and must be 1 for TRUE and 0 for FALSE. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:tidal'.
tidal_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field tidal is NIL. If the field tidal_void is NULL, then the property is not NIL and the value in field tidal applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:tidal/@xsi:nil'.
width_lower	lower	hy-p:Watercourse	Double	Lower bound of width. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:width/hy-p:WidthRange/hy-p:lower'.
width_lower_uom	-	hy-p:Watercourse	String(255)	This field contains the unit of measure associated with the value in field width_lower. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:width/hy-p:WidthRange/hy-p:lower/@uom'.
width_upper	upper	hy-p:Watercourse	Double	Upper bound of width.

				In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:width/hy-p:WidthRange/hy-p:upper'.
width_upper_uom	-	hy-p:Watercourse	String(255)	This field contains the unit of measure associated with the value in field width_upper. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:width/hy-p:WidthRange/hy-p:upper/@uom'.

Dependent Object Class 'hypSurfaceWaterL_name'

General description

This Object Class contains values for the property hy:HydroObject/hy:geographicalName.

Fields

Field	Property name	In feature types	Type	Documentation
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the data type. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetworkElementL/netNetworkElementS, the IFCID value must be unique across these tables.
name	geographicalName	hy-p:StandingWater hy-p:Watercourse	String(255)	A geographical name that is used to identify a hydrographic object in the real world. It provides a 'key' for implicitly associating different representations of the object. EXAMPLE A standing water in a mapping view may share the same geographical name as a WFD lake in a reporting view, implying they are both representations of the same real world object. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:geographicalName'.
RID	(IFC only)	(all)	Integer	Reference to IFCID field in parent 'hypSurfaceWaterL'.

Dependent Object Class 'hypSurfaceWaterL_hyId'

General description

This Object Class contains values for the property hy:HydroObject/hy:hydroId.

Fields

Field	Property name	In feature types	Type	Documentation

classificationScheme	classificationScheme	hy-p:StandingWater hy-p:Watercourse	String(255)	A description of the identification scheme (National, European, etc.) being used. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/hy:HydroIdentifier/hy:classificationScheme'.
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the data type. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetworkElementL/netNetworkElementS, the IFCID value must be unique across these tables.
localId	localId	hy-p:StandingWater hy-p:Watercourse	String(255)	A local identifier, assigned by some authority. NOTE It will often be a national hydrographic identifier. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/hy:HydroIdentifier/hy:localId'.
namespace	namespace	hy-p:StandingWater hy-p:Watercourse	String(255)	An indicator of the scope for the local identifier. NOTE In the case of a national hydrographic identifier it should be a two-letter country code as per ISO 3166-1-Alpha-2. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/hy:HydroIdentifier/hy:namespace'.
RID	(IFC only)	(all)	Integer	Reference to IFCID field in parent 'hypSurfaceWaterL'.

Dependent Object Class 'hypSurfaceWaterL_relHyObj'

General description

This Object Class contains values for the property hy:HydroObject/hy:relatedHydroObject.

Fields

Field	Property name	In feature types	Type	Documentation
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the data type. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetw

				orkElementL/netNetworkElementS, the IFCID value must be unique across these tables.
relHyObj	relatedHydroObject	hy-p:StandingWater hy-p:Watercourse	String(255)	A related hydrographic object representing the same real-world entity. The value of this field must be a URN or an absolute URL referencing the related HydroObject. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:relatedHydroObject'.
RID	(IFC only)	(all)	Integer	Reference to IFCID field in parent 'hypSurfaceWaterL'.

Relationship table 'hypSurfaceWater_drainsBasinLS'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:drainsBasin. The property is defined as:

The basin(s) drained by a surface water.

In the reverse direction, this relationship contains the property hy-p:DrainageBasin/hy-p:outlet. The property is defined as:

The surface water outlet(s) of a drainage basin.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterL'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:drainsBasin'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypDrainageBasinS'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:outlet'.

Relationship table 'hypSurfaceWater_neighbourLP'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:neighbour. The property is defined as:

An association to another instance of the same real-world surface water in another data set.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterL'. In the GML encoding, this field is represented by the following

				Xpath expression: 'hy-p:neighbour'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterP'.

Relationship table 'hypSurfaceWater_neighbourLL'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:neighbour. The property is defined as:

An association to another instance of the same real-world surface water in another data set.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterL'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:neighbour'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterL'.

Relationship table 'hypSurfaceWater_neighbourLS'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:neighbour. The property is defined as:

An association to another instance of the same real-world surface water in another data set.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterL'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:neighbour'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterS'.

Relationship table 'hypSurfaceWater_bankLS'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:bank. The property is defined as:

The bank(s) associated to a surface water.

Fields

Field	Property name	In feature types	Type	Documentation

ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterL'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:bank'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'lcShoreS'.

2.1.3 Πηγάδια

Feature Class 'hypSurfaceWaterP'

Index

General description

This class contains instances of the INSPIRE feature type 'hy-p:SurfaceWater'. It is used to represent instances with a point geometry.

INSPIRE feature type 'hy-p:SurfaceWater' has subtypes and the following table lists all concrete INSPIRE types that are represented in this Feature Class, if the feature is with a point geometry.

Table: Feature types stored in Feature Class 'hypSurfaceWaterP'

Feature type	Source application schema	Subtype code	Documentation
hy-p:StandingWater	Hydro - Physical Waters	158	A body of water that is entirely surrounded by land. SOURCE [DFDD]. NOTE It may occur in a natural terrain depression in which water collects, or may be impounded by a dam, or formed by its bed being hollowed out of the soil, or formed by embanking and/or damming up a natural hollow (for example: by a beaver dam). It may be connected to inflowing / outflowing watercourses or other standing waters.
hy-p:Watercourse	Hydro - Physical Waters	157	A natural or man-made flowing watercourse or stream. SOURCE [EuroRegionalMap].

Fields

Field	Property name	In feature types	Type	Documentation
bank_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy-p:bank, see the corresponding relationship table(s) between hypSurfaceWaterP and the tables containing instances of type lc:Shore, is NIL. If the field bank_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:bank/@xsi:nil'.
beginLifespanVersion	beginLifespanVersion	hy-p:StandingWater hy-p:Watercourse	Date	Date and time at which this version of the spatial object was inserted or changed in the spatial data set. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:beginLifespanVersion'.
beginLifespanVersion_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field beginLifespanVersion is NIL. If the field beginLifespanVersion_void is NULL, then the property is not NIL and the value in field beginLifespanVersion applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:beginLifespanVersion/@xsi:nil'.
condition	condition	hy-p:Watercourse	String(255)	The state of planning, construction, repair, and/or maintenance of a watercourse. SOURCE [Based on DFDD].

				NOTE Only relevant for a man-made watercourse. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:condition'. Valid values: disused — The facility is not used. functional — The facility is functional. projected — The facility is being designed. Construction has not yet started. underConstruction — The facility is under construction and not yet functional. This app and not to maintenance work.
condition_cl	-	hy-p:Watercourse	String(255)	This field contains the absolute URI of the code list dictionary that describes that values allowed values in field condition and their description. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:condition/@codeSpace'.
condition_void	-	hy-p:Watercourse	SmallInteger	This field indicates whether the property in field condition is NIL. If the field condition_void is NULL, then the property is not NIL and the value in field condition applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:condition/@xsi:nil'.
delineationKnown	delineationKnown	hy-p:Watercourse	SmallInteger	An indication that the delineation (for example: limits and information) of a spatial object is known. SOURCE [DFDD]. EXAMPLE The delineation may not be known in the following situations: - an underground watercourse - real underground network segment (pipeline or natural network section) - transition area between a broad river and a smaller tributary. The value of this field is a boolean and must be 1 for

				TRUE and 0 for FALSE. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:delineationKnown'.
delineationKnown_void	-	hy-p:Watercourse	SmallInteger	This field indicates whether the property in field delineationKnown is NIL. If the field delineationKnown_void is NULL, then the property is not NIL and the value in field delineationKnown applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:delineationKnown/@xsi:nil'.
drainsBasin_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy-p:drainsBasin, see the corresponding relationship table(s) between hypSurfaceWaterP and the tables containing instances of type hy-p:DrainageBasin, is NIL. If the field drainsBasin_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:drainsBasin/@xsi:nil'.
elevation	elevation	hy-p:StandingWater	Double	Elevation above mean sea level. SOURCE [Based on EuroRegionalMap]. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:elevation'.
elevation_uom	-	hy-p:StandingWater	String(255)	This field contains the unit of measure associated with the value in field elevation.

				The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:elevation/@uom'.
elevation_void	-	hy-p:StandingWater	SmallInteger	This field indicates whether the property in field elevation is NIL. If the field elevation_void is NULL, then the property is not NIL and the value in field elevation applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:elevation/@xsi:nil'.
endLifespanVersion	endLifespanVersion	hy-p:StandingWater hy-p:Watercourse	Date	Date and time at which this version of the spatial object was superseded or retired in the spatial data set. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:endLifespanVersion'.
endLifespanVersion_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field endLifespanVersion is NIL. If the field endLifespanVersion_void is NULL, then the property is not NIL and the value in field endLifespanVersion applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:endLifespanVersion/@xsi:nil'.
hyId_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy:hydroId (entries in table hypSurfaceWaterP_hyId) is NIL. If the field hyId_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no

				additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/@xsi:nil'.
id_localId	localId	hy-p:StandingWater hy-p:Watercourse	String(255)	A local identifier, assigned by the data provider. The local identifier is unique within the namespace, that is no other spatial object carries the same unique identifier. NOTE It is the responsibility of the data provider to guarantee uniqueness of the local identifier within the namespace. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:localId'.
id_namespace	namespace	hy-p:StandingWater hy-p:Watercourse	String(255)	Namespace uniquely identifying the data source of the spatial object. NOTE The namespace value will be owned by the data provider of the spatial object and will be registered in the INSPIRE External Object Identifier Namespaces Register. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:namespace'.
id_versionId	versionId	hy-p:StandingWater hy-p:Watercourse	String(255)	The identifier of the particular version of the spatial object, with a maximum length of 25 characters. If the specification of a spatial object type with an external object identifier includes life-cycle information, the version identifier is used to distinguish between the different versions of a spatial object. Within the set of all versions of a spatial object, the version identifier is unique. NOTE The maximum length has been selected to allow

				for time stamps based on ISO 8601, for example, "2007-02-12T12:12:12+05:30" as the version identifier. NOTE 2 The property is void, if the spatial data set does not distinguish between different versions of the spatial object. It is missing, if the spatial object type does not support any life-cycle information. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:versionId'.
id_versionId_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field id_versionId is NIL. If the field id_versionId_void is NULL, then the property is not NIL and the value in field id_versionId applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:versionId/@xsi:nil'.
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the object/feature. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetworkElementL/netNetworkElementS, the IFCID value must be unique across these tables. In the GML encoding, this field is represented by the following Xpath expression: '@gml:id'.
length_	length	hy-p:Watercourse	Double	Length of the watercourse. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:length'.

length_uom	-	hy-p:Watercourse	String(255)	This field contains the unit of measure associated with the value in field length. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:length/@uom'.
length_void	-	hy-p:Watercourse	SmallInteger	This field indicates whether the property in field length is NIL. If the field length_void is NULL, then the property is not NIL and the value in field length applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:length/@xsi:nil'.
level_	level	hy-p:Watercourse	String(255)	Vertical location of watercourse relative to ground. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:level'. Valid values: onGroundSurface — The spatial object is on ground level. suspendedOrElevated — The spatial object is suspended or elevated. underground — The spatial object is underground.
level_void	-	hy-p:Watercourse	SmallInteger	This field indicates whether the property in field level_ is NIL. If the field level_void is NULL, then the property is not NIL and the value in field level_ applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this

				field is represented by the following Xpath expression: 'hy-p:level/@xsi:nil'.
localType	localType	hy-p:StandingWater hy-p:Watercourse	String(255)	Provides 'local' name for the type of surface water. EXAMPLE Canal, channel, ditch, etc. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:localType'.
localType_loc	-	hy-p:StandingWater hy-p:Watercourse	String(255)	This field contains the locale associated with the value in field localType. For example, if the localised text is in the locale English/UTF-8, then this field is a URL pointing to a publically available <PT_Locale> resource that might have the following content:. <PT_Locale id='locale-en'> <languageCode> <LanguageCode codeList='http://services.interactive-instruments.de/download/cl/LanguageCode.xml' codeListValue='eng'>English</LanguageCode> </languageCode> <characterEncoding> <MD_CharacterSetCode codeList='http://services.interactive-instruments.de/download/cl/MD_CharacterSetCode.xml' codeListValue='utf8'>UTF-8</MD_CharacterSetCode> </characterEncoding> </PT_Locale>. PT_Locale is specified in ISO/TS 19139. In INSPIRE, UTF-8 should be used for the character encoding. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:localType/@locale'.
localType_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field localType is NIL. If the field localType_void is NULL, then the property is not NIL and the value in field localType applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a

				reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:localType/@xsi:nil'.
lod	levelOfDetail	hy-p:StandingWater hy-p:Watercourse	Integer	Resolution, expressed as the inverse of an indicative scale or a ground distance. NOTE The object is captured at a scale of this level of detail; rules apply for portrayal and visualisation. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:levelOfDetail'.
meanDepth	meanDepth	hy-p:StandingWater	Double	Average depth of the body of water. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:meanDepth'.
meanDepth_uom	-	hy-p:StandingWater	String(255)	This field contains the unit of measure associated with the value in field meanDepth. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:meanDepth/@uom'.
meanDepth_void	-	hy-p:StandingWater	SmallInteger	This field indicates whether the property in field meanDepth is NIL. If the field meanDepth_void is NULL, then the property is not NIL and the value in field meanDepth applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:meanDepth/@xsi:nil'.
name_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy:geographicalName (entries in table hypSurfaceWaterP_name) is NIL. If the field name_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no

				additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:geographicalName/@xsi:nil'.
neighbour_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy-p:neighbour, see the corresponding relationship table(s) between hypSurfaceWaterP and the tables containing instances of type hy-p:SurfaceWater, is NIL. If the field neighbour_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:neighbour/@xsi:nil'.
origin	origin	hy-p:StandingWater hy-p:Watercourse	String(255)	Origin of the surface water. SOURCE [Based on EuroRegionalMap]. EXAMPLE Natural, man-made, etc. NOTE 1 Natural surface waters are natural watercourses (e.g. rivers, streams) and standing waters (e.g. pools, lakes) naturally preserved and that have been canalised and / or dammed either for navigation or for preventing flood disaster. NOTE 2 A man-made surface water is a surface water entirely created by man for drainage, storage or transportation purpose, this includes canals, ditches and reservoirs. In the GML encoding, this field is represented by the

				following Xpath expression: 'hy-p:origin'. Valid values: manMade: An indication that a spatial object is man-made. SOURCE [DFDD]. natural: An indication that a spatial object is natural.
origin_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field origin is NIL. If the field origin_void is NULL, then the property is not NIL and the value in field origin applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:origin/@xsi:nil'.
persistence	persistence	hy-p:StandingWater hy-p:Watercourse	String(255)	The degree of persistence of water. SOURCE [Based on DFDD]. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:persistence'. Valid values: dry: Filled and/or flowing infrequently, generally only during and/or immediately after heavy precipitation. SOURCE [DFDD]. NOTE The waterbody is often vegetated (for example: with

				shrubs); such a	streambed in the Southwestern United States is termed a 'derramadero'.
				ephemeral	Filled and/or flowing during and immediately after precipitation. SOURCE [DFDD].
				intermittent	Filled and/or flowing for part of the year. SOURCE [DFDD].
				perennial	Filled and/or flowing continuously throughout the year as its bed lies below the water table. SOURCE [DFDD].
persistence_cl	-	hy-p:StandingWater hy-p:Watercourse	String(255)	This field contains the absolute URI of the code list dictionary that describes that values allowed values in field persistence and their description. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:persistence/@codeSpace'.	
persistence_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field persistence is NIL. If the field persistence_void is NULL, then the property is not NIL and the value in field persistence applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:persistence/@xsi:nil'.	
SHAPE	geometry	hy-	Geometry	The geometry of the surface water: - either a curve or	

		p:StandingWater hy-p:Watercourse		surface for a watercourse; - either a point or surface for a standing water. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:geometry'.
streamOrder_order	order	hy-p:Watercourse	String(255)	Number (or code) expressing the degree of branching or dividing in a stream or drainage basin system. SOURCE [Based on UNESCO/WMO International Glossary of Hydrology]. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:streamOrder/hy-p:HydroOrderCode/hy-p:order'.
streamOrder_orderScheme	orderScheme	hy-p:Watercourse	String(255)	A description of the concept for ordering. EXAMPLE Strahler, Horton, Pfaffstetter etc. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:streamOrder/hy-p:HydroOrderCode/hy-p:orderScheme'.
streamOrder_scope	scope	hy-p:Watercourse	String(255)	An indicator of the scope or origin for an order code (including whether it is national, supranational or European). NOTE In the case of a national hydrographic identifier it may start with a two-letter country code as per ISO 3166-1-Alpha-2. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:streamOrder/hy-p:HydroOrderCode/hy-p:scope'.
surfaceArea	surfaceArea	hy-p:StandingWater	Double	Surface area of the body of water. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:surfaceArea'.
surfaceArea_uom	-	hy-p:StandingWater	String(255)	This field contains the unit of measure associated with the value in field surfaceArea. The unit is expressed as the symbol of

				the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:surfaceArea/@uom'.
surfaceArea_void	-	hy-p:StandingWater	SmallInteger	This field indicates whether the property in field surfaceArea is NIL. If the field surfaceArea_void is NULL, then the property is not NIL and the value in field surfaceArea applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:surfaceArea/@xsi:nil'.
tidal	tidal	hy-p:StandingWater hy-p:Watercourse	SmallInteger	Identifies whether the surface water is affected by tidal water. The value of this field is a boolean and must be 1 for TRUE and 0 for FALSE. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:tidal'.
tidal_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field tidal is NIL. If the field tidal_void is NULL, then the property is not NIL and the value in field tidal applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:tidal/@xsi:nil'.
width_lower	lower	hy-p:Watercourse	Double	Lower bound of width. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:width/hy-p:WidthRange/hy-p:lower'.
width_lower_uom	-	hy-p:Watercourse	String(255)	This field contains the unit of measure associated with the value in field

				width_lower. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:width/hy-p:WidthRange/hy-p:lower/@uom'.
width_upper	upper	hy-p:Watercourse	Double	Upper bound of width. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:width/hy-p:WidthRange/hy-p:upper'.
width_upper_uom	-	hy-p:Watercourse	String(255)	This field contains the unit of measure associated with the value in field width_upper. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:width/hy-p:WidthRange/hy-p:upper/@uom'.

Dependent Object Class 'hypSurfaceWaterP_name'

General description

This Object Class contains values for the property hy:HydroObject/hy:geographicalName.

Fields

Field	Property name	In feature types	Type	Documentation
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the data type. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetworkElementL/netNetworkElementS, the IFCID value must be unique across these tables.
name	geographicalName	hy-p:StandingWater hy-p:Watercourse	String(255)	A geographical name that is used to identify a hydrographic object in the real world. It provides a 'key' for implicitly associating different representations of the object. EXAMPLE A standing water in a mapping view may share the same geographical name as a WFD lake in a reporting view, implying they are both representations of the same real world object. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:geographicalName'.
RID	(IFC only)	(all)	Integer	Reference to IFCID field in parent 'hypSurfaceWaterP'.

Dependent Object Class 'hypSurfaceWaterP_hyId'

General description

This Object Class contains values for the property hy:HydroObject/hy:hydroId.

Fields

Field	Property name	In feature types	Type	Documentation
classificationScheme	classificationScheme	hy-p:StandingWater hy-p:Watercourse	String(255)	A description of the identification scheme (National, European, etc.) being used. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/hy:HydroIdentifier/hy:classificationScheme'.
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the data type. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetworkElementL/netNetworkElementS, the IFCID value must be unique across these tables.
localId	localId	hy-p:StandingWater hy-p:Watercourse	String(255)	A local identifier, assigned by some authority. NOTE It will often be a national hydrographic identifier. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/hy:HydroIdentifier/hy:localId'.
namespace	namespace	hy-p:StandingWater hy-p:Watercourse	String(255)	An indicator of the scope for the local identifier. NOTE In the case of a national hydrographic identifier it should be a two-letter country code as per ISO 3166-1-Alpha-2. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/hy:HydroIdentifier/hy:namespace'.
RID	(IFC only)	(all)	Integer	Reference to IFCID field in parent 'hypSurfaceWaterP'.

Dependent Object Class 'hypSurfaceWaterP_relHyObj'

General description

This Object Class contains values for the property hy:HydroObject/hy:relatedHydroObject.

Fields

Field	Property name	In feature types	Type	Documentation
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the data type. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetworkElementL/netNetworkElementS, the IFCID value must be unique across these tables.
relHyObj	relatedHydroObject	hy-p:StandingWater hy-p:Watercourse	String(255)	A related hydrographic object representing the same real-world entity. The value of this field must be a URN or an absolute URL referencing the related HydroObject. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:relatedHydroObject'.
RID	(IFC only)	(all)	Integer	Reference to IFCID field in parent 'hypSurfaceWaterP'.

Relationship table 'hypSurfaceWater_drainsBasinPS'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:drainsBasin. The property is defined as:

The basin(s) drained by a surface water.

In the reverse direction, this relationship contains the property hy-p:DrainageBasin/hy-p:outlet. The property is defined as:

The surface water outlet(s) of a drainage basin.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterP'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:drainsBasin'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypDrainageBasinS'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:outlet'.

Relationship table 'hypSurfaceWater_neighbourPP'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:neighbour. The property is defined as:

An association to another instance of the same real-world surface water in another data set.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterP'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:neighbour'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterP'.

Relationship table 'hypSurfaceWater_neighbourPL'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:neighbour. The property is defined as:

An association to another instance of the same real-world surface water in another data set.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterP'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:neighbour'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterL'.

Relationship table 'hypSurfaceWater_neighbourPS'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:neighbour. The property is defined as:

An association to another instance of the same real-world surface water in another data set.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterP'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:neighbour'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterS'.

Relationship table 'hypSurfaceWater_bankPS'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:bank. The property is defined as:

The bank(s) associated to a surface water.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterP'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:bank'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'lcShoreS'.

2.1.4 Επιφανειακά Υδατα

Feature Class 'hypSurfaceWaterS'

Index

General description

This class contains instances of the INSPIRE feature type 'hy-p:SurfaceWater'. It is used to represent instances with a polygon geometry.

INSPIRE feature type 'hy-p:SurfaceWater' has subtypes and the following table lists all concrete INSPIRE types that are represented in this Feature Class, if the feature is with a polygon geometry.

Table: Feature types stored in Feature Class 'hypSurfaceWaterS'

Feature type	Source application schema	Subtype code	Documentation

hy-p:StandingWater	Hydro - Physical Waters	158	A body of water that is entirely surrounded by land. SOURCE [DFDD]. NOTE It may occur in a natural terrain depression in which water collects, or may be impounded by a dam, or formed by its bed being hollowed out of the soil, or formed by embanking and/or damming up a natural hollow (for example: by a beaver dam). It may be connected to inflowing / outflowing watercourses or other standing waters.
hy-p:Watercourse	Hydro - Physical Waters	157	A natural or man-made flowing watercourse or stream. SOURCE [EuroRegionalMap].

Fields

Field	Property name	In feature types	Type	Documentation
bank_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy-p:bank, see the corresponding relationship table(s) between hypSurfaceWaterS and the tables containing instances of type lc:Shore, is NIL. If the field bank_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:bank/@xsi:nil'.
beginLifespanVersion	beginLifespanVersion	hy-p:StandingWater hy-p:Watercourse	Date	Date and time at which this version of the spatial object was inserted or changed in the spatial data set. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:beginLifespanVersion'.
beginLifespanVersion_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field beginLifespanVersion is NIL. If the field beginLifespanVersion_void is NULL, then the property is not NIL and the value in field beginLifespanVersion applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of

<table>
<tr><td></td><td></td><td></td><td></td><td>'Unpopulated'.

In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:beginLifespanVersion/@xsi:nil'.</td></tr>
<tr><td>condition</td><td>condition</td><td>hy-p:Watercourse</td><td>String(255)</td><td>The state of planning, construction, repair, and/or maintenance of a watercourse.

SOURCE [Based on DFDD].

NOTE Only relevant for a man-made watercourse.

In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:condition'.

Valid values:

<table><tr><td>disused</td><td>The facility is not used.</td></tr><tr><td>functional</td><td>The facility is functional.</td></tr><tr><td>projected</td><td>The facility is being designed. Construction has not yet started.</td></tr><tr><td>underConstruction</td><td>The facility is under construction and not yet functional. This applies only to the initial construction of the facility and not to maintenance work.</td></tr></table></td></tr>
<tr><td>condition_cl</td><td>-</td><td>hy-p:Watercourse</td><td>String(255)</td><td>This field contains the absolute URI of the code list dictionary that describes that values allowed values in field condition and their description.

In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:condition/@codeSpace'.</td></tr>
<tr><td>condition_void</td><td>-</td><td>hy-p:Watercourse</td><td>SmallInteger</td><td>This field indicates whether the property in field condition is NIL. If the field condition_void is NULL, then the property is not NIL and the value in field condition applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If</td></tr>
</table>

				the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:condition/@xsi:nil'.
delineationKnown	delineationKnown	hy-p:Watercourse	SmallInteger	An indication that the delineation (for example: limits and information) of a spatial object is known. SOURCE [DFDD]. EXAMPLE The delineation may not be known in the following situations: - an underground watercourse - real underground network segment (pipeline or natural network section) - transition area between a broad river and a smaller tributary. The value of this field is a boolean and must be 1 for TRUE and 0 for FALSE. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:delineationKnown'.
delineationKnown_void	-	hy-p:Watercourse	SmallInteger	This field indicates whether the property in field delineationKnown is NIL. If the field delineationKnown_void is NULL, then the property is not NIL and the value in field delineationKnown applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:delineationKnown/@xsi:nil'.
drainsBasin_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy-p:drainsBasin, see the corresponding relationship table(s) between hypSurfaceWaterS and the tables containing instances of type hy-p:DrainageBasin, is NIL. If the field drainsBasin_void is NULL,

				then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:drainsBasin/@xsi:nil'.
elevation	elevation	hy-p:StandingWater	Double	Elevation above mean sea level. SOURCE [Based on EuroRegionalMap]. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:elevation'.
elevation_uom	-	hy-p:StandingWater	String(255)	This field contains the unit of measure associated with the value in field elevation. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:elevation/@uom'.
elevation_void	-	hy-p:StandingWater	SmallInteger	This field indicates whether the property in field elevation is NIL. If the field elevation_void is NULL, then the property is not NIL and the value in field elevation applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:elevation/@xsi:nil'.
endLifespanVersion	endLifespanVersion	hy-p:StandingWater hy-p:Watercourse	Date	Date and time at which this version of the spatial object was superseded or retired in the spatial data set. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:endLifespanVersion'.
endLifespanVersion_void	-	hy-p:StandingWater	SmallInteger	This field indicates whether the property in field endLifespanVersion is NIL.

		hy-p:Watercourse		If the field endLifespanVersion_void is NULL, then the property is not NIL and the value in field endLifespanVersion applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:endLifespanVersion/@xsi:nil'.
hyId_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy:hydroId (entries in table hypSurfaceWaterS_hyId) is NIL. If the field hyId_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/@xsi:nil'.
id_localId	localId	hy-p:StandingWater hy-p:Watercourse	String(255)	A local identifier, assigned by the data provider. The local identifier is unique within the namespace, that is no other spatial object carries the same unique identifier. NOTE It is the responsibility of the data provider to guarantee uniqueness of the local identifier within the namespace. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:localId'.
id_namespace	namespace	hy-p:StandingWater hy-p:Watercourse	String(255)	Namespace uniquely identifying the data source of the spatial object. NOTE The namespace value will be owned by the data provider of the spatial

				object and will be registered in the INSPIRE External Object Identifier Namespaces Register. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:namespace'.
id_versionId	versionId	hy-p:StandingWater hy-p:Watercourse	String(255)	The identifier of the particular version of the spatial object, with a maximum length of 25 characters. If the specification of a spatial object type with an external object identifier includes life-cycle information, the version identifier is used to distinguish between the different versions of a spatial object. Within the set of all versions of a spatial object, the version identifier is unique. NOTE The maximum length has been selected to allow for time stamps based on ISO 8601, for example, "2007-02-12T12:12:12+05:30" as the version identifier. NOTE 2 The property is void, if the spatial data set does not distinguish between different versions of the spatial object. It is missing, if the spatial object type does not support any life-cycle information. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:inspireId/base:Identifier/base:versionId'.
id_versionId_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field id_versionId is NIL. If the field id_versionId_void is NULL, then the property is not NIL and the value in field id_versionId applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression:

				'hy-p:inspireId/base:Identifier/base:versionId/@xsi:nil'.
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the object/feature. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetworkElementL/netNetworkElementS, the IFCID value must be unique across these tables. In the GML encoding, this field is represented by the following Xpath expression: '@gml:id'.
length_	length	hy-p:Watercourse	Double	Length of the watercourse. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:length'.
length_uom	-	hy-p:Watercourse	String(255)	This field contains the unit of measure associated with the value in field length. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:length/@uom'.
length_void	-	hy-p:Watercourse	SmallInteger	This field indicates whether the property in field length is NIL. If the field length_void is NULL, then the property is not NIL and the value in field length applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:length/@xsi:nil'.
level_	level	hy-p:Watercourse	String(255)	Vertical location of watercourse relative to ground. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:level'.

				Valid values: onGroundSurface — The spatial object is on ground level. suspendedOrElevated — The spatial object is suspended or elevated. underground — The spatial object is underground.
level_void	-	hy-p:Watercourse	SmallInteger	This field indicates whether the property in field level_ is NIL. If the field level_void is NULL, then the property is not NIL and the value in field level_ applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:level/@xsi:nil'.
localType	localType	hy-p:StandingWater hy-p:Watercourse	String(255)	Provides 'local' name for the type of surface water. EXAMPLE Canal, channel, ditch, etc. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:localType'.
localType_loc	-	hy-p:StandingWater hy-p:Watercourse	String(255)	This field contains the locale associated with the value in field localType. For example, if the localised text is in the locale English/UTF-8, then this field is a URL pointing to a publically available <PT_Locale> resource that might have the following content:. <PT_Locale id='locale-en'> <languageCode> <LanguageCode codeList='http://services.interactive-instruments.de/download/cl/LanguageCode.xml' codeListValue='eng'>English</LanguageCode> </languageCode> <characterEncoding> <MD_CharacterSetCode codeList='http://services.interactive-instruments.de/download/cl/MD_CharacterSetCode.xml' codeListValue='utf8'>UTF-

				8</MD_CharacterSetCode> </characterEncoding> </PT_Locale>. PT_Locale is specified in ISO/TS 19139. In INSPIRE, UTF-8 should be used for the character encoding. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:localType/@locale'.
localType_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field localType is NIL. If the field localType_void is NULL, then the property is not NIL and the value in field localType applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:localType/@xsi:nil'.
lod	levelOfDetail	hy-p:StandingWater hy-p:Watercourse	Integer	Resolution, expressed as the inverse of an indicative scale or a ground distance. NOTE The object is captured at a scale of this level of detail; rules apply for portrayal and visualisation. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:levelOfDetail'.
meanDepth	meanDepth	hy-p:StandingWater	Double	Average depth of the body of water. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:meanDepth'.
meanDepth_uom	-	hy-p:StandingWater	String(255)	This field contains the unit of measure associated with the value in field meanDepth. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:meanDepth/@uom'.
meanDepth_void	-	hy-p:StandingWater	SmallInteger	This field indicates whether the property in field meanDepth is NIL. If the

				field meanDepth_void is NULL, then the property is not NIL and the value in field meanDepth applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:meanDepth/@xsi:nil'.
name_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy:geographicalName (entries in table hypSurfaceWaterS_name) is NIL. If the field name_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:geographicalName/@xsi:nil'.
neighbour_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the associated property hy-p:neighbour, see the corresponding relationship table(s) between hypSurfaceWaterS and the tables containing instances of type hy-p:SurfaceWater, is NIL. If the field neighbour_void is NULL, then the property is not NIL and the property applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:neighbour/@xsi:nil'.
origin	origin	hy-	String(255)	Origin of the surface water.

		p:StandingWater hy-p:Watercourse		SOURCE [Based on EuroRegionalMap]. EXAMPLE Natural, man-made, etc. NOTE 1 Natural surface waters are natural watercourses (e.g. rivers, streams) and standing waters (e.g. pools, lakes) naturally preserved and that have been canalised and / or dammed either for navigation or for preventing flood disaster. NOTE 2 A man-made surface water is a surface water entirely created by man for drainage, storage or transportation purpose, this includes canals, ditches and reservoirs. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:origin'. Valid values: manMade — An indication that a spatial object is man-made. SOURCE [DFDD]. natural — An indication that a spatial object is natural.
origin_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field origin is NIL. If the field origin_void is NULL, then the property is not NIL and the value in field origin applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:origin/@xsi:nil'.
persistence	persistence	hy-p:StandingWater hy-p:Watercourse	String(255)	The degree of persistence of water. SOURCE [Based on DFDD].

				In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:persistence'. Valid values: dry – Filled and/or flowing infrequently, generally only during and/or immediately after heavy precipitation. SOURCE [DFDD]. NOTE The waterbody is often vegetated (for example: with shrubs); such a streambed in the Southwestern United States is termed a 'derramadero'. ephemeral – Filled and/or flowing during and immediately after precipitation. SOURCE [DFDD]. intermittent – Filled and/or flowing for part of the year. SOURCE [DFDD]. perennial – Filled and/or flowing continuously throughout the year as its bed lies below the water table. SOURCE [DFDD].
persistence_cl	-	hy-p:StandingWater hy-p:Watercourse	String(255)	This field contains the absolute URI of the code list dictionary that describes that values allowed values in field persistence and their description. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:persistence/@codeSpace'.
persistence_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field persistence is NIL. If the field persistence_void is NULL, then the property is not NIL and the value in field persistence applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If

				the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:persistence/@xsi:nil'.
SHAPE	geometry	hy-p:StandingWater hy-p:Watercourse	Geometry	The geometry of the surface water: - either a curve or surface for a watercourse; - either a point or surface for a standing water. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:geometry'.
streamOrder_order	order	hy-p:Watercourse	String(255)	Number (or code) expressing the degree of branching or dividing in a stream or drainage basin system. SOURCE [Based on UNESCO/WMO International Glossary of Hydrology]. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:streamOrder/hy-p:HydroOrderCode/hy-p:order'.
streamOrder_orderScheme	orderScheme	hy-p:Watercourse	String(255)	A description of the concept for ordering. EXAMPLE Strahler, Horton, Pfaffstetter etc. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:streamOrder/hy-p:HydroOrderCode/hy-p:orderScheme'.
streamOrder_scope	scope	hy-p:Watercourse	String(255)	An indicator of the scope or origin for an order code (including whether it is national, supranational or European). NOTE In the case of a national hydrographic identifier it may start with a two-letter country code as per ISO 3166-1-Alpha-2. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:streamOrder/hy-p:HydroOrderCode/hy-p:scope'.
surfaceArea	surfaceArea	hy-	Double	Surface area of the body of

		p:StandingWater		water. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:surfaceArea'.
surfaceArea_uom	-	hy-p:StandingWater	String(255)	This field contains the unit of measure associated with the value in field surfaceArea. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:surfaceArea/@uom'.
surfaceArea_void	-	hy-p:StandingWater	SmallInteger	This field indicates whether the property in field surfaceArea is NIL. If the field surfaceArea_void is NULL, then the property is not NIL and the value in field surfaceArea applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:surfaceArea/@xsi:nil'.
tidal	tidal	hy-p:StandingWater hy-p:Watercourse	SmallInteger	Identifies whether the surface water is affected by tidal water. The value of this field is a boolean and must be 1 for TRUE and 0 for FALSE. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:tidal'.
tidal_void	-	hy-p:StandingWater hy-p:Watercourse	SmallInteger	This field indicates whether the property in field tidal is NIL. If the field tidal_void is NULL, then the property is not NIL and the value in field tidal applies. If the value is '0', the property is NIL with no additional inforamtion about the reason for the NIL value. If the value is '1', the property is NIL with a reason of 'Unknown'. If the value is '2', the property is NIL with a reason of 'Unpopulated'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:tidal/@xsi:nil'.

width_lower	lower	hy-p:Watercourse	Double	Lower bound of width. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:width/hy-p:WidthRange/hy-p:lower'.
width_lower_uom	-	hy-p:Watercourse	String(255)	This field contains the unit of measure associated with the value in field width_lower. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:width/hy-p:WidthRange/hy-p:lower/@uom'.
width_upper	upper	hy-p:Watercourse	Double	Upper bound of width. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:width/hy-p:WidthRange/hy-p:upper'.
width_upper_uom	-	hy-p:Watercourse	String(255)	This field contains the unit of measure associated with the value in field width_upper. The unit is expressed as the symbol of the unit. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:width/hy-p:WidthRange/hy-p:upper/@uom'.

Dependent Object Class 'hypSurfaceWaterS_name'

General description

This Object Class contains values for the property hy:HydroObject/hy:geographicalName.

Fields

Field	Property name	In feature types	Type	Documentation
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the data type. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetworkElementL/netNetworkElementS, the IFCID value must be unique across these tables.
name	geographicalName	hy-p:StandingWater hy-p:Watercourse	String(255)	A geographical name that is used to identify a hydrographic object in the real world. It provides a 'key' for implicitly associating different representations of the object. EXAMPLE A standing water in a mapping view may

				share the same geographical name as a WFD lake in a reporting view, implying they are both representations of the same real world object. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:geographicalName'.
RID	(IFC only)	(all)	Integer	Reference to IFCID field in parent 'hypSurfaceWaterS'.

Dependent Object Class 'hypSurfaceWaterS_hyId'

General description

This Object Class contains values for the property hy:HydroObject/hy:hydroId.

Fields

Field	Property name	In feature types	Type	Documentation
classificationScheme	classificationScheme	hy-p:StandingWater hy-p:Watercourse	String(255)	A description of the identification scheme (National, European, etc.) being used. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/hy:HydroIdentifier/hy:classificationScheme'.
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the data type. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetworkElementL/netNetworkElementS, the IFCID value must be unique across these tables.
localId	localId	hy-p:StandingWater hy-p:Watercourse	String(255)	A local identifier, assigned by some authority. NOTE It will often be a national hydrographic identifier. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/hy:HydroIdentifier/hy:localId'.
namespace	namespace	hy-p:StandingWater hy-p:Watercourse	String(255)	An indicator of the scope for the local identifier. NOTE In the case of a national hydrographic identifier it should be a two-letter country code as per ISO 3166-1-Alpha-2. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:hydroId/hy:HydroIdentifier/hy:namespace'.

RID	(IFC only)	(all)	Integer	Reference to IFCID field in parent 'hypSurfaceWaterS'.

Dependent Object Class 'hypSurfaceWaterS_relHyObj'

General description

This Object Class contains values for the property hy:HydroObject/hy:relatedHydroObject.

Fields

Field	Property name	In feature types	Type	Documentation
IFCID	(IFC only)	(all)	Integer	IFC identifier, used in references to the data type. The value must be unqiue within the table. In cases of several tables for different geometry types of the same base type in the application schema, e.g. netNetworkElement/netNetworkElementP/netNetworkElementL/netNetworkElementS, the IFCID value must be unique across these tables.
relHyObj	relatedHydroObject	hy-p:StandingWater hy-p:Watercourse	String(255)	A related hydrographic object representing the same real-world entity. The value of this field must be a URN or an absolute URL referencing the related HydroObject. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:relatedHydroObject'.
RID	(IFC only)	(all)	Integer	Reference to IFCID field in parent 'hypSurfaceWaterS'.

Relationship table 'hypSurfaceWater_drainsBasinSS'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:drainsBasin. The property is defined as:

The basin(s) drained by a surface water.

In the reverse direction, this relationship contains the property hy-p:DrainageBasin/hy-p:outlet. The property is defined as:

The surface water outlet(s) of a drainage basin.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterS'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:drainsBasin'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypDrainageBasinS'. In the GML encoding, this field is represented by the following

				Xpath expression: 'hy-p:outlet'.

Relationship table 'hypSurfaceWater_neighbourSP'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:neighbour. The property is defined as:

An association to another instance of the same real-world surface water in another data set.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterS'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:neighbour'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterP'.

Relationship table 'hypSurfaceWater_neighbourSL'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:neighbour. The property is defined as:

An association to another instance of the same real-world surface water in another data set.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterS'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:neighbour'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterL'.

Relationship table 'hypSurfaceWater_neighbourSS'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:neighbour. The property is defined as:

An association to another instance of the same real-world surface water in another data set.

Fields

Field	Property name	In feature types	Type	Documentation

ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterS'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:neighbour'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterS'.

Relationship table 'hypSurfaceWater_bankSS'

General description

In forward direction, this relationship contains the property hy-p:SurfaceWater/hy-p:bank. The property is defined as:

The bank(s) associated to a surface water.

Fields

Field	Property name	In feature types	Type	Documentation
ID1	(IFC only)	n/a	Integer	Reference to IFCID field in table 'hypSurfaceWaterS'. In the GML encoding, this field is represented by the following Xpath expression: 'hy-p:bank'.
ID2	(IFC only)	n/a	Integer	Reference to IFCID field in table 'lcShoreS'.

2.2 Εισαγωγή δεδομένων από το δίκτυο των σταθμών παρακολούθησης

Για την ομαλή και αποτελεσματική λειτουργία του συστήματος τα δεδομένα που θα συλλέγουν οι μετρητικοί σταθμοί θα πρέπει να είναι προσβάσιμα μέσω διαδικτύου απο τον ΗΥ που θα φιλοξενεί το webgis. Συγκεκριμένα θα πρέπει κάθε μετρητικός σταθμός να είναι προσβάσιμος μέσω μηχανισμού ταυτοποίησης (user name - password) μέσω συγκεκριμένης διαδικτυακής διεύθυνσης.

Επιπρόσθετα, επιθυμητά αλλά όχι απαραίτητα χαρακτηριστικά μιας τέτοιας υπηρεσίας είναι:

- Σύνταξη διαγραμμάτων των παραμέτρων που μετρούνται ως προς τον χρόνο
- Σύνταξη διαγραμμάτων για όλο το αρχείο μετρήσεων αλλά και για πρόσφατες μετρήσεις
- Αποστολή των μετρήσεων μέσω μηχανισμού ταυτοποίησης σε οποιοδήποτε ΗΥ έχει πρόσβαση στο διαδίκτυο με μορφή πινάκων (excel, dbf, csv κ.α.)

3. ΤΕΧΝΙΚΕΣ ΠΡΟΔΙΑΓΡΑΦΕΣ ΣΥΣΤΗΜΑΤΟΣ

3.1 Προδιαγραφές λογισμικού

3.1.1 Λειτουργικό σύστημα

- Πλήρη συμβατότητα με το λειτουργικό σύστημα Windows 7 Profesional 64bit και τις εφαρμογές που το συνοδεύουν.
- Το περιβάλλον χρήσης να υποστηρίζει και την Αγγλική γλώσσα.
- Απεριόριστη δυνατότητα αλλαγής υπολογιστών εγκατάστασης (άδειες ανεξάρτητες από τον υπολογιστή εγκατάστασης).

3.1.2 Βασικό Σύστημα Γεωγραφικών Πληροφοριών

- Εργαλεία διανυσματοποίησης χωρικών στοιχείων.
- Δυνατότητα snapping κατά την επεξεργασία των χωρικών στοιχείων ακόμη και σε πολλαπλά θεματικά επίπεδα αλλά και δυνατότητα ρύθμισης των χαρακτηριστικών του περιβάλλοντος αγκίστρωσης (snapping).
- Μετασχηματισμός των διανυσματικών δεδομένων.
- Εργαλεία πλοήγησης στο χάρτη (μεγέθυνση, σμίκρυνση, μετακίνηση, χρήση χωρικών δεικτών, δημιουργία υπερσυνδέσεων των χωρικών δεδομένων με εξωτερικές εφαρμογές, URL και μακροεντολές).
- Δημιουργία ερωτημάτων στα χωρικά και στα περιγραφικά δεδομένα.
- Δημιουργία γραφημάτων (αναλυτικά τους τύπους).
- Υποστήριξη προβολής δεδομένων on-the-fly έτσι, ώστε δυο ή περισσότερα επίπεδα της ίδιας περιοχής διαφορετικής προβολής (raster και vector) να μπορούν να εμφανίζονται μαζί.
- Δυνατότητα χρήσης δεδομένων από πίνακες και παρουσίασης τους ως σημεία στον χάρτη.
- Δυνατότητα χρήσης maptips, ετικετών με χρήση κανόνων προτεραιότητας, δημιουργίας annotations από ετικέτες (labels) καθώς και αποθήκευσή τους σε χωρική βάση ή σε αρχείο εργασίας.
- Διαχείριση και έλεγχο του τρόπου εμφάνισης των δεδομένων στο χάρτη.
- Ρύθμιση ποσοστού διαφάνειας για την εμφάνιση των διανυσματικών και πλεγματικών δεδομένων.
- Δημιουργία ετικετών για τα διανυσματικά δεδομένα από τιμές αποθηκευμένες σε ένα ή σε περισσότερα πεδία του πίνακα περιγραφικών χαρακτηριστικών τους.
- Εργαλεία μετασχηματισμού ή προβολής δεδομένων πλεγματικού τύπου και διανυσματικού τύπου.
- Τεχνικές ταξινόμησης των χωρικών δεδομένων βάσει των ποσοτικών ή και των ποιοτικών τους χαρακτηριστικών για τη δημιουργία θεματικών χαρτών.
- Δημιουργία, επεξεργασία και διαχείριση αρχείων χαρτών, προτύπων χαρτών, αρχείων συμβόλων διανυσματικών δεδομένων.
- Εξαγωγή χαρτών σε τύπους δεδομένων όπως jpg, tiff, bmp, gif, png, emf, svg κ.α
- Γεωκωδικοποίηση διευθύνσεων.
- Δυνατότητα γεωαναφοράς εικόνων.
- Υποστήριξη GPS.
- Υποστήριξη Tablet PC.

- Δημιουργία μεταδεδομένων και παρουσίασης τους με τη χρήση διαφορετικών μορφών (υποστήριξη ISO).
- Παραμετροποίηση περιβάλλοντος εργασίας και δημιουργίας μακροεντολών με χρήση της VBA.
- Υποστήριξη περιβαλλόντων script προγραμματισμού σε JavaScript, VBScript, Visual Basic, VBA κ.α.
- Δυνατότητα πρόσβασης σε υπηρεσίες διαδικτύου.
- Δυνατότητα χρήσης των επεκτάσεων και συνεργασία με το λογισμικό συλλογής δεδομένων πεδίου.
- Δυνατότητα διαχείρισης του λογισμικού WebGIS.
- Δυνατότητα επεξεργασίας διανυσματικών δεδομένων γεωγραφικής βάσης αποθηκευμένης σε RDBMS.
- Δυνατότητα αποθήκευσης κειμένου τύπου annotation στη χωρική βάση δεδομένων.
- Δυνατότητες σχεδίασης κι επεξεργασίας γεωμετρίας σχεδιαστικού τύπου (π.χ. κάθετη σε πλευρά, παράλληλη σε πλευρά, χρήση γωνίας και απόστασης, κτλ). Δυνατότητες σχεδίασης παραλληλογράμμων, κύκλων πολυγώνων, τόξων, σημείων, γραμμών, κειμένου. Να δοθεί περιγραφή των δυνατοτήτων.
- Αντιγραφή γεωμετρίας διανυσματικών δεδομένων από ένα θεματικό επίπεδο σε άλλο.
- Γενίκευση σχήματος (ομαλοποίηση, απλοποίηση) γραμμικών οντοτήτων.
- Αυτόματη ή ημιαυτόματη διανυσματοποίηση δεδομένων πλεγματικού τύπου 1bit ή 8bit.
- Δυνατότητα ρύθμισης των παραμέτρων αυτόματης διανυσματοποίησης.
- Προεπισκόπηση του αποτελέσματος της αυτόματης διανυσματοποίησης πριν την εκτέλεση της.
- Δυνατότητα snapping σε δεδομένα πλεγματικού τύπου.
- Δυνατότητα ρύθμισης του περιβάλλοντος snapping για τα δεδομένα πλεγματικού τύπου.
- Δυνατότητα tracing κατά τη διανυσματοποίηση πλεγματικών δεδομένων.
- Τεχνικές επιλογής κελιών σε δεδομένα πλεγματικού τύπου.
- Εργαλεία επεξεργασίας των δεδομένων πλεγματικού τύπου για την εισαγωγή τους στη διαδικασία αυτόματης διανυσματοποίησης.
- Δημιουργία και διαχείριση τοπολογίας. Να αναφερθούν αναλυτικά οι δυνατότητες.
- Δυνατότητα ορισμού τοπολογικών κανόνων τόσο μεταξύ των στοιχείων ενός θεματικού επιπέδου όσο και μεταξύ διαφορετικών θεματικών επιπέδων.
- Εργαλεία εντοπισμού και διόρθωσης της τοπολογίας βάσει επιλεγμένων τοπολογικών κανόνων.
- Δυνατότητα τοπικού ελέγχου ισχύος των τοπολογικών κανόνων σε περιοχή που ορίζει ο χρήστης.
- Δυνατότητα τροποποίησης των τοπολογικών κανόνων.
- Δυνατότητα σύνθεσης (merge) της γεωμετρίας χωρικών στοιχείων.
- Διαχείριση γεωγραφικής βάσης δεδομένων αποθηκευμένης σε RDBMS.
- Δημιουργία σχέσεων μεταξύ των πινάκων βάσης γεωγραφικών δεδομένων.
- Δημιουργία και διαχείριση τοπολογίας γεωμετρικού δικτύου.
- Κανόνες σύνδεσης μεταξύ των στοιχείων δικτύου.
- Ειδικά εργαλεία επεξεργασίας στοιχείων δικτύου.

- Δυνατότητα ολοκλήρωσης με UML/CASE εργαλεία.
- Δυνατότητα γεωκωδικοποίησης διευθύνσεων
- Δυναμική ενημέρωση γεωκωδικοποιημένων διευθύνσεων για κάθε νέα διεύθυνση που εισάγεται σε πίνακα διευθύνσεων.
- Δυνατότητα μεμονωμένης και μαζικής μεταβολής των ιδιοτήτων κειμένου τύπου annotation.
- Δυνατότητα δημιουργίας και διαχείρισης κειμένου τύπου annotation άμεσα συνδεδεμένου με το χωρικό στοιχείο (feature linked annotation).
- Δυνατότητα δημιουργίας κανόνων συμβολισμού στοιχείων και αποθήκευσή τους με τα χωρικά στοιχεία στη βάση δεδομένων.
- Δυνατότητα μετατροπής γραφικών σε χωρικά στοιχεία και αποθήκευση τους στη χωρική βάση δεδομένων.
- Έλεγχο της τοποθέτησης ετικετών στο χάρτη με χρήση εξειδικευμένων κανόνων και προηγμένων δυνατοτήτων (να γίνει εκτενής αναφορά).
- Δυνατότητα δημιουργίας annotations που είναι δυναμικά συνδεδεμένα με σημειακά, πολυγωνικά ή γραμμικά στοιχεία έτσι, ώστε αν αλλάξει η τιμή του στοιχείου στη βάση ή η θέση του να αλλάξει αυτόματα και το annotation.
- Δυνατότητα ορισμού χαρτογραφικών κανόνων τοποθέτησης των ετικετών στον χάρτη.
- Δημιουργία και διαχείριση καταλόγων δεδομένων πλεγματικού τύπου σε γεωγραφική βάση δεδομένων αποθηκευμένη σε RDBMS.
- Εργαλεία γεωγραφικής επεξεργασίας και ανάλυσης θεματικών επιπέδων (ανάλυση εγγύτητας, επικαλύψεων κλπ).
- Μοντελοποίηση δεδομένων.
- Δυνατότητα εγκατάστασης σε λειτουργικά συστήματα Windows και UNIX.
- Δυνατότητα εισαγωγής και εξαγωγής αρχείων: DLG, E00, S57, SDTS, VPF.
- Δυνατότητα δημιουργίας σύνθετων χωρικών στοιχείων όπως Regions από γραμμές ή από πολύγωνα, Routes.
- Λειτουργίες γενίκευσης δεδομένων όπως απλοποίηση, ομαλοποίηση, ομαδοποίηση κ.λ.π.
- Προβολή αρχείων τοπολογίας.
- Κτίσιμο και διόρθωση τοπολογίας σε αρχεία.
- Διαχείριση πινάκων αρχείων coverage.
- Δημιουργία ισχυρών μοντέλων γεωεπεξεργασίας για την αναγνώριση σχέσεων μεταξύ γεωγραφικών δεδομένων, την ανάλυση και την ολοκλήρωση των δεδομένων.
- Μετατροπές δεδομένων από και προς πάρα πολλούς τύπους αρχείων.
- Δυνατότητα ταυτόχρονης χρήσης περιβάλλοντος γραμμής εντολών.
- Παροχή υποστήριξης στην εγκατάσταση και λειτουργία του λογισμικού.
- Δυνατότητα διαχείρισης πινάκων και ευρετηρίων.

3.1.3 Σύστημα Γεωγραφικών Πληροφοριών για άμεση διάθεση GIS δεδομένων, κατά τα πρότυπα portal (GIS Data Portal)

- Το λογισμικό για λόγους ευχρηστίας και για ενιαίο περιβάλλον εργασίας θα πρέπει να πληροί συνθήκες συμβατότητας και ομοιογένειας με τα προσφερόμενο desktop λογισμικό GIS.

- Πλήρη συμβατότητα για λόγους καλής συνεργασίας και μέγιστης εκμετάλλευσης πληροφοριών, με το προσφερόμενης πλατφόρμας WebGIS λογισμικού
- Πλήρη εκμετάλλευση μεταδεδομένων καθ' όλη τη δομή της πλατφόρμας με εισαγωγή τους είτε δυναμικά, είτε με χρήση φορμών (χειροκίνητα).
- Δυνατότητα δημιουργίας γεωπληροφοριακού ιστοτόπου (geoportal site).
- Δυνατότητα οργάνωσης των προσφερομένων δεδομένων σε διαφορετικές μορφές.
- Υποστήριξη Open Geospatial Consortium, Inc. (OGC), CORE και ebRIM εφαρμογών των OGC CS-W 2.0.1 προδιαγραφών.
- Υποστήριξη κατ' ελάχιστο: Microsoft IIS 5, Apache 2.058 ως διακομιστές HTTP.
- Υποστήριξη κατ' ελάχιστο: Apache Tomcat 5.5.17, Apache Tomcat 6.0.13, Oracle WebLogic 10 MP1, Sun GlassFish 2.1 ως μηχανή servlet.
- Υποστήριξη : Java JDK 5 (Update 13), Java JDK 6 (Update 13) ως πλατφόρμα Java.
- Παροχή υποστήριξης στην εγκατάσταση και λειτουργία του λογισμικού.
- Υποστήριξη κατ' ελάχιστο: Microsoft SQL Server 2005 SP2, Microsoft SQL Server 2008, Oracle 9i, Oracle 10g, Oracle 11g, PostgreSQL ως DBMS.
- Υποστήριξη κατ'ελάχιστο: Red Hat Enterprise Linux AS/ES 5, Microsoft Windows XP SP2, Microsoft Windows 2003 Server, Microsoft Windows 2008 Server Standard, Microsoft Windows 2003 Server 64 bit ως λειτουργικό σύστημα.

3.1.4 Σύστημα Γεωγραφικών Πληροφοριών για δημιουργία και επεξεργασία κυψελωτών (raster) δεδομένων

- Το λογισμικό για λόγους ευχρηστίας και για ενιαίο περιβάλλον εργασίας θα πρέπει να αποτελεί επέκταση των προσφερόμενων desktop λογισμικών GIS.
- Θα παρέχει εργαλεία δημιουργίας μοντέλων καταλληλότητας για την επιλογή θέσεων ειδικής χρήσης.
- Θα επιτρέπει την ανάλυση επιφανειών και την αναγνώριση ειδικών προτύπων σε αυτά.
- Θα παρέχει εργαλεία για την ανάλυση αποστάσεων λαμβάνοντας υπόψη στοιχεία κόστους για τον υπολογισμό των συντομότερων ή επιθυμητών αποστάσεων.
- Θα παρέχει ειδικά εργαλεία για τον υπολογισμό πυκνότητας σε μεγέθη και την εξαγωγή τους σε raster μορφή.
- Θα επιτρέπει την υδρολογική ανάλυση με χρήση σχετικών δεδομένων και δεδομένων επιφάνειας.
- Θα επιτρέπει την στατιστική ανάλυση των χωρικών δεδομένων λαμβάνοντας υπόψη γειτονικές τιμές και πολυπαραμετρικές τεχνικές.
- Θα παρέχει εργαλεία για τον υπολογισμό νέων τιμών σε παραμέτρους, συνδυάζοντας πολλαπλούς χάρτες, κάνοντας χρήση βαρών και αναγνωρίζοντας συσχετίσεις ανάμεσα στα δεδομένα (map algebra).
- Θα επιτρέπει την δημιουργία ερωτημάτων και την παρουσίαση των αποτελεσμάτων πάνω σε χάρτες.
- Θα επιτρέπει την παραμετροποίηση και την εφαρμογή scripts για την ανάπτυξη νέων μοντέλων εκτίμησης.

- Θα πρέπει να παρέχει ειδικό γραφικό εργαλείο στο οποίο θα παρουσιάζονται με απλό τρόπο και κατανοητό οι διαδικασίες και τα μοντέλα που εφαρμόζονται. Μέσα από το εργαλείο αυτό θα είναι δυνατή και η παραμετροποίηση των διαδικασιών.
- Μετατροπή από vector σε raster και αντίστροφα.
- Παροχή υποστήριξης στην εγκατάσταση και λειτουργία του λογισμικού.
- Θα είναι δυνατή η παρουσίαση των αποτελεσμάτων σε raster μορφή και θα πρέπει να παρέχονται ειδικά εργαλεία για την γενίκευση των αποτελεσμάτων.

3.1.5 Σύστημα Γεωγραφικών Πληροφοριών με τις εξής κατ' ελάχιστον δυνατότητες μετατροπής διαφορετικών μορφών GIS δεδομένων

- Το λογισμικό για λόγους ευχρηστίας και για ενιαίο περιβάλλον εργασίας θα πρέπει να αποτελεί επέκταση των προσφερόμενων desktop λογισμικών GIS.
- Υποστήριξη 75 διαφορετικών τύπων δεδομένων συμπεριλαμβανομένων των: GML, XML, WFS, DWG, DXF, MID/MIF, TAB, Oracle κλπ.
- Εξαγωγή σε 50 διαφορετικούς τύπους χωρικών δεδομένων.
- Παροχή υποστήριξης στην εγκατάσταση και λειτουργία του λογισμικού.
- Εργαλεία μετάφρασης και μετατροπής δεδομένων από ένα τύπο δεδομένων σε κάποιο άλλο.

3.1.6 Σύστημα Γεωγραφικών Πληροφοριών με τις εξής κατ' ελάχιστον δυνατότητες συλλογής, διαχείρισης και μετατροπής δεδομένων σε επίπεδο GIS πληροφοριών

- Το λογισμικό για λόγους ευχρηστίας και για ενιαίο περιβάλλον εργασίας θα πρέπει να πληρεί συνθήκες συμβατότητας με τα προσφερόμενο desktop λογισμικό GIS.
- Υποστήριξη συλλογής δεδομένων σε πραγματικό χρόνο.
- Διαχείριση συλλεχθέντων δεδομένων σε ενιαία διαδικτυακή (web) πλατφόρμα.
- Διάθεση δεδομένων σε GIS μορφή.
- Δυνατότητα δημιουργίας συνδέσεων (data links) με διάφορες πηγές δεδομένων προς συλλογή.
- Ως προς το τμήμα συλλογής δεδομένων: υποστήριξη COM αρχιτεκτονικής για μεταφορά κι επεξεργασία δεδομένων.
- Ως προς το τμήμα συλλογής δεδομένων: υποστήριξη τεχνολογίας multithread, για βελτιωμένες επιδόσεις.
- Ως προς το τμήμα διάθεσης δεδομένων: υποστήριξη τεχνολογίας Java.
- Ως προς το τμήμα διάθεσης δεδομένων: δυνατότητα διαμόρφωσης ιστοτόπων με παραμέτρους, ώστε να ικανοποιούνται διάφορες ανάγκες.
- Παροχή υποστήριξης στην εγκατάσταση και λειτουργία του λογισμικού.
- Υποστήριξη κατ'ελάχιστο: Apache 2.0.5x, Microsoft IIS 5, Sun Java System Application Server 7.

3.2 Προδιαγραφές εξοπλισμού υλισμικού (hardware)

3.2.1 Σταθμός εργασίας (workstation)

- Τετραπύρηνο επεξεργαστή 64 bit με συχνότητα λειτουργίας τουλάχιστον 2,5GHz και λανθάνουσα μνήμη (cache) 12MB.
- Μνήμη 8GB RAM.
- Ελεγκτή σκληρών δίσκων SATA.
- Ελεγκτή οθόνης με τουλάχιστον 512MB μνήμης, ανεξάρτητα από την κεντρική μνήμη (RAM) του συστήματος.
- Ένα σκληρό δίσκο στερεάς κατάστασης (ssd) χωρητικότητας 64GB τουλάχιστον.
- Ένα σκληρό δίσκο SATA χωρητικότητας τουλάχιστον 1,5TB με ταχύτητα περιστροφής τουλάχιστον 7200 rpm.
- Κάρτα δικτύου (NIC), ενσωματωμένη στην μητρική ή ανεξάρτητη, που να μπορεί να λειτουργεί σε ταχύτητες 1000 ή 100 Mbps.
- Δυνατότητα αναπαραγωγής και ηχογράφησης στερεοφωνικού ήχου με αντίστοιχες υποδοχές σύνδεσης.
- Ενεργά στερεοφωνικά ηχεία.
- Τουλάχιστον 2 ελεύθερες υποδοχές PCI.
- Τουλάχιστον 3 ελεύθερες, εξωτερικές υποδοχές USB 2.0.
- Δυνατότητα υποστήριξης του λειτουργικού συστήματος windows 7 64bit.
- Συσκευή ανάγνωσης και εγγραφής οπτικών δίσκων DVD και CD με ταχύτητα εγγραφής τουλάχιστον 16X.
- Οθόνη τουλάχιστον 19" τεχνολογίας LCD ή TFT με βέλτιστη ανάλυση 1600 X 900 τουλάχιστον.
- Πληκτρολόγιο με Λατινικούς και Ελληνικούς χαρακτήρες.
- Οπτικό ποντίκι με τροχό κύλισης (wheel) και επιφάνεια κύλισης (mousepad).
- USB Flash stick 8GB
- Εξωτερικό σκληρό δίσκο με σύνδεση USB 2.0 χωρητικότητας 1,5TB.
- Τροφοδοτικό αδιάλειπτου παροχής (UPS) 1000VA με θύρα επικοινωνίας USB.

3.3 Προδιαγραφές ασφάλειας

3.3.1 Λογισμικό λήψης εφεδρικών αντιγράφων

- Δυνατότητα λήψης αντιγράφων (backup) και αποκατάστασης (recovery) ολόκληρων δίσκων ή καταμήσεων (partition) δίσκων.
- Δυνατότητα κεντρικής διαχείρισης κατανεμημένων συστημάτων στο δίκτυο. Λήψη εφεδρικών αντιγράφων ή αποκατάσταση δίσκων μέσω δικτύου.
- Υποστήριξη των λειτουργικών συστημάτων εξυπηρετητών της σειράς Windows Server από την έκδοση 2003 και μετέπειτα.
- Υποστήριξη των λειτουργικών συστημάτων της σειράς windows XP.
- Υποστήριξη των λειτουργικών συστημάτων της σειράς windows 7.
- Υποστήριξη των λειτουργικών συστημάτων Linux.
- Δυνατότητα επιλογής συγκεκριμένων αρχείων ή φακέλων για αποκατάσταση, από ένα εφεδρικό αρχείο εικόνας δίσκου (image file).
- Δυνατότητα εργασίας σε γραφικό περιβάλλον.

3.3.2 Λογισμικό αντιικής προστασίας

- Υποστήριξη των λειτουργικών συστημάτων Windows XP 64bit και Windows 7 64bit.
- Αυτόματη λήψη ανανεώσεων μέσω διαδικτύου.
- Παροχή υποστήριξης στην εγκατάσταση και λειτουργία του λογισμικού.
- Άδεια χρήσης διετούς τουλάχιστον διάρκειας.

3.4 Προδιαγραφές συνδεσιμότητας με εσωτερικό δίκτυο και διαδίκτυο

- Ελάχιστη ταχύτητα ανεβάσματος αρχείων (uploading): 1Mbps.
- Ελάχιστη ταχύτητα κατεβάσματος αρχείων (downloading): 8Mbps.
- Ελάχιστη ταχύτητα επικοινωνίας με εσωτερικό δίκτυο: 100Mbps.
- Επικοινωνία μέσω εσωτερικού δικτύου με τον εξυπηρετητή στον οποίο συλλέγονται τα δεδομένα των μετρητικών σταθμών.

ΒΙΒΛΙΟΓΡΑΦΙΑ

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